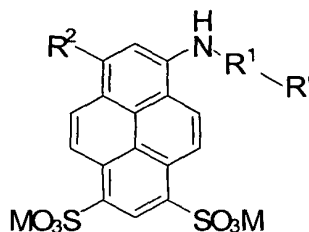


Claims

We claim:

1. A fluorescent compound of the general structure:



where $R^2 = -OH, -NH_2, SO_3 -$ or $SH(NH_2)_2$,

M is one of the alkali metals (Li, Na, K), ammonium (NH₄) , or pyridinium (Py),

R^1 is a spacer comprised of 2 to 20 carbon, oxygen or nitrogen atoms, with the carbon containing sequences chosen from alkyl, alkenyl, arylalkyl, or alkoxy groups, which can bear any of several substitutions along the carbon chain, including but not limited to amino, carbonyl, carboxyl, hydroxyl, sulfonyl, sulfonamide, oxyethylene, ethylene oxide, or hydroxyl moieties,

and,

R' = a terminal carboxyl, amino, sulfhydryl or biotinyl group.

2. The compound, according to claim 1, wherein:

$R^1 = CO - (CH_2)_n$ where $n = 1-15$, and

$R^2 = -COOH, -SH, -NH_2, -NCS, -CO_2, -NHS, -Maleimide$, or Hydrazine.

3. The compound, according to claim 1, wherein:

$R^1 = - CO- PEG$ where $n = 1-15$, and where

$R^2 = -COOH, -SH, -NH_2, -NCS, -NCO, -CO_2, -NHS, -Maleimide$ or Hydrazide.

4. The compound, according to claim 1, wherein:

$R^1 = -CO-DEXTRAN$ and where

$R^2 = -COOH, -SH, -NH_2, -NCS, -NCO, -CO_2, -NHS, -Maleimide$ or Hydrazide.

5. The compound, according to claim 1, wherein:

$R^1 = CO(CH_2)_n-(CONHCHCONH)_N$ where $R = Alkyl, Aryl, n = 1-100$,

$$\begin{array}{c} | \\ R \end{array}$$

$n = 1-15$, and

$R^2 = -COOH, -SH, -NH_2, -NCS, -CO_2, -NHS, -Maleimide$, or Hydrazine.

6. The compound, according to claim 1, wherein:

$R^1 = -CO-Aryl-(CH_2)_n$ and where

$R^2 = -COOH, -SH, -NH_2, -NCS, -CO_2, -NHS, -Maleimide$, or Hydrazine.

7. The compound, according to claim 1, wherein:

$R^1 = CO(CH_2)_n-CONH-(CH_2)_N$, where

$R^2 = -SH, -NH_2, -NCS, -NCO, -Maleimide$, or $-NHNH_2$,

8. The compound, according to claim 1, wherein:

$R^1 = CO(CH_2)_n-CONH-PEG$, where $n = 1-15$ and

$R^2 = -SH, -NH_2, -NCS, -NCO, -Maleimide$, or $-NHNH_2$.

9. The compound, according to claim 1, wherein:

$R^1 = CO(CH_2)_n-CONH-DEXTRAN$, where $n = 1-15$ and

$R^2 = -SH, -NH_2, -NCS, -NCO, -Maleimide$, or $-NHNH_2$.

10. The compound, according to claim 1, wherein:

$R^1 = CH_2-(CH_2)_n-CONH-X$, where

$X = (CH_2)_n$, $n = 1-15$

= PEG

= DEXTRAN

and $R^2 = -SH, -NH_2, -NCS, -NCO, -Maleimide$, or $-NHNH_2$.

11. The compound, according to claim 1, wherein:

$R^1 = CH_2-(CH_2)_n$, where $n = 1-15$ and

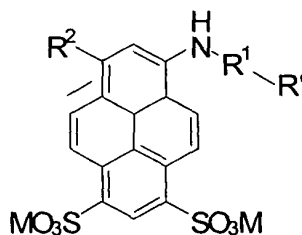
$R^2 = -SH, -NH_2, -NCS, -NCO, -Maleimide, -COONHS$, or $-NHNH_2$.

12. The compound, according to claim 1, wherein:

$R^1 = C_nH_{n+2}$, where $n = 1-15$ and

$R^2 = -SH, -NH_2, -NCS, -NCO, -Maleimide$, or $-COONHS$.

13. A fluorescent compound of the structure:



where $R^2 = -OH, -NH_2, SO_3^-$ or $SH(NH_2)_2$,

M is one of the alkali metals (Li, Na, K), ammonium (NH_4), or pyridinium (Py),

R^1 is a spacer comprised of 2 to 20 carbon, oxygen or nitrogen atoms, with the carbon containing sequences chosen from alkyl, alkenyl, arylalkyl, or alkoxy groups, which can bear any of several substitutions along the carbon chain, including but not limited to amino, carbonyl,

carboxyl, hydroxyl, sulfonyl, sulfonamide, oxyethylene, ethylene oxide, or hydroxyl moieties,

and,

R' = a succinimidyl ester, hydrazide, isothiocynato, isocyanato, maleimido, halo-acetamido, biotin or other homofunctional linker chemistry capable of covalently binding with a complementary reactive chemical entity on another molecule for the purpose of permanently linking the fluorophore to the second molecule.

14. The compound, according to claim 13, wherein:

R¹ = - CO- PEG where n = 1-15, and where

R² = -COOH, -SH, -NH₂, -NCS, -NCO, -CO₂, -NHS, -Maleimide or Hydrazide.

15. The compound, according to claim 13, wherein:

R¹ = - CO- DEXTRAN and where

R² = -COOH, -SH, -NH₂, -NCS, -NCO, -CO₂, -NHS, -Maleimide or Hydrazide.

16. The compound, according to claim 13, wherein:

R¹ = CO(CH₂)_n-(CONHCHCONH)_N where R = Alkyl, Aryl, n = 1-100,

$$\begin{array}{c} | \\ R \end{array}$$

n = 1-15, and

R² = -COOH, -SH, -NH₂, -NCS, -CO₂, -NHS, -Maleimide, or Hydrazine.

17. The compound, according to claim 13, wherein:

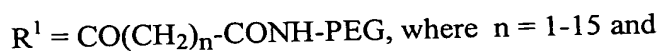
R¹ = -CO-Aryl-(CH₂)_n and where

R² = -COOH, -SH, -NH₂, -NCS, -CO₂, -NHS, -Maleimide, or Hydrazine.

18. The compound, according to claim 13, wherein:



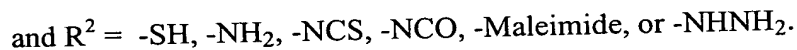
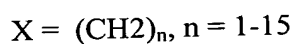
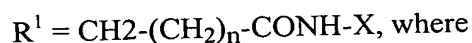
19. The compound, according to claim 13, wherein:



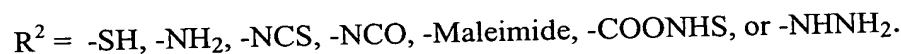
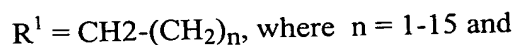
20. The compound, according to claim 13, wherein:



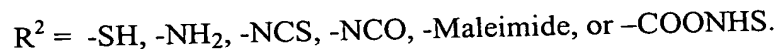
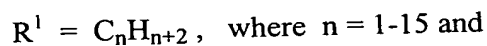
21. The compound, according to claim 13, wherein:



22. The compound, according to claim 13, wherein:



23. The compound, according to claim 13, wherein:

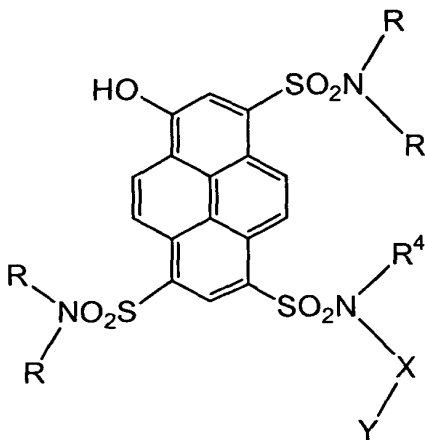


24. The compound, according to claim 13, wherein:

$R^1 = C_nH_{n+2}$, where $n = 1-15$ and

$R^2 = -SH, -NH_2, -NCS, -NCO, -Maleimide, \text{ or } -COONHS$.

25. A fluorescent compound of the structure



R is chosen from any of alkyl, alkenyl, alkylaryl, aromatic, or alkoxy groups which can be substituted by various constituents including but not limited to amino, carbonyl, carboxyl, hydroxyl, sulfonyl, sulfonamide, oxyethylene, ethylene oxide, or hydroxyl moieties,

R4 is chosen from $-H$, $-CH_3$, alkyl, alkenyl, aromatic, or alkylaryl groups which can, in turn be substituted with any of several substitutions along the carbon chain, including but not limited to amino, carbonyl, carboxyl, hydroxyl, sulfonyl, sulfonamide, oxyethylene, ethylene oxide, or hydroxyl moieties,

X is chosen from one of $(CH_2)_n$, aryl- $(CH_2)_n$, PEG, DEXTRAN, $(CH_2)_n$ -CONH- $(CH_2)_n$, $(CH_2)_n$ -CONH-Z, where $n = 1-15$, Z = PEG, DEXTRAN or a polypeptide, which can bear any of several substitutions along the carbon chain, including but not limited to amino, carbonyl, carboxyl, hydroxyl, sulfonyl, sulfonamide, oxyethylene, ethylene oxide, or hydroxyl moieties,

and,

Y is chosen from one of -NH₂, -NCS, -SH, -OH, -COOH, -COONHS, -NH₂, -Maleimide, -hydrazide, CHO, biotinyl group, avidinyl group, NHCOCH₂I or other monofunctional linker chemistry capable of covalently binding with a complementary reactive chemical entity on another molecule for the purpose of permanently linking the fluorophore to the second molecule.

26. The compound, according to claim 25, wherein $X = (CH_2)_n$ where $n=1-15$ and Y is chosen from one of -NH₂, -NCS, -SH, -OH, -COOH, -COONHS, -NH₂, -Maleimide, -hydrazide, CHO, biotinyl group, avidinyl group, NHCOCH₂I or other monofunctional linker chemistry capable of covalently binding with a complementary reactive chemical entity on another molecule for the purpose of permanently linking the fluorophore to the second molecule.

27. The compound, according to claim 25, wherein $X = \text{aryl}-(CH_2)_n$ where $n=1-15$ and Y is chosen from one of -NH₂, -NCS, -SH, -OH, -COOH, -COONHS, -NH₂, -Maleimide, -hydrazide, CHO, biotinyl group, avidinyl group, NHCOCH₂I or other monofunctional linker chemistry capable of covalently binding with a complementary reactive chemical entity on another molecule for the purpose of permanently linking the fluorophore to the second molecule.

28. The compound, according to claim 25, wherein $X = \text{PEG}$ and Y is chosen from one of -NH₂, -NCS, -SH, -OH, -COOH, -COONHS, -NH₂, -Maleimide, -hydrazide, CHO, biotinyl group, avidinyl group, NHCOCH₂I or other monofunctional linker chemistry capable of covalently binding with a complementary reactive chemical entity on another molecule for the purpose of permanently linking the fluorophore to the second molecule.

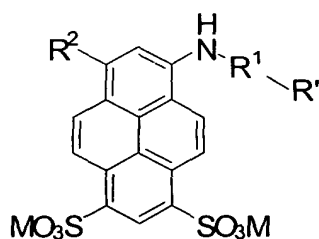
29. The compound, according to claim 25, wherein $X = \text{DEXTRAN}$ and Y is chosen from one of -NH₂, -NCS, -SH, -OH, -COOH, -COONHS, -NH₂, -Maleimide, -hydrazide, CHO, biotinyl group, avidinyl group, NHCOCH₂I or other

monofunctional linker chemistry capable of covalently binding with a complementary reactive chemical entity on another molecule for the purpose of permanently linking the fluorophore to the second molecule.

30. The compound, according to claim 25, wherein $X = (CH_2)_n-CONH-(CH_2)_n$, where $n=1-15$ and Y is chosen from one of $-NH_2$, $-NCS$, $-SH$, $-OH$, $-COOH$, $-COONHS$, $-NH_2$, $-Maleimide$, $-hydrazide$, CHO , biotinyl group, avidinyl group, $NHCOCH_2I$ or other monofunctional linker chemistry capable of covalently binding with a complementary reactive chemical entity on another molecule for the purpose of permanently linking the fluorophore to the second molecule.

31. The compound, according to claim 25, wherein $X = (CH_2)_N-CONH-Z$, where $Z = PEG$, $DEXTRAN$ or a polypeptide and Y is chosen from one of $-NH_2$, $-NCS$, $-SH$, $-OH$, $-COOH$, $-COONHS$, $-NH_2$, $-Maleimide$, $-hydrazide$, CHO , biotinyl group, avidinyl group, $NHCOCH_2I$ or other monofunctional linker chemistry capable of covalently binding with a complementary reactive chemical entity on another molecule for the purpose of permanently linking the fluorophore to the second molecule.

32. A kit comprising the fluorescent of the general structure:



where $R^2 = -OH$, $-NH_2$, $SO_3 -$ or $SH(NH_2)_2$,

M is one of the alkali metals (Li , Na , K), ammonium (NH_4) , or pyridinium (Py),

R^1 is a spacer comprised of 2 to 20 carbon, oxygen or nitrogen atoms, with the carbon containing sequences chosen from alkyl, alkenyl, arylalkyl, or alkoxy groups, which can bear any of several substitutions along the carbon chain, including but not limited to amino, carbonyl, carboxyl, hydroxyl, sulfonyl, sulfonamide, oxyethylene, ethylene oxide, or hydroxyl moieties,

and,

R' = a terminal carboxyl, amino, sulfhydryl or biotinyl group.

33. The kit, according to claim 32, wherein:

$R^1 = \text{CO} - (\text{CH}_2)_n$ where $n = 1-15$, and

$R^2 = -\text{COOH}$, $-\text{SH}$, $-\text{NH}_2$, $-\text{NCS}$, $-\text{CO}_2$, $-\text{NHS}$, $-\text{Maleimide}$, or Hydrazine.

34. The kit, according to claim 32, wherein:

$R^1 = -\text{CO}-\text{PEG}$ where $n = 1-15$, and where

$R^2 = -\text{COOH}$, $-\text{SH}$, $-\text{NH}_2$, $-\text{NCS}$, $-\text{NCO}$, $-\text{CO}_2$, $-\text{NHS}$, $-\text{Maleimide}$ or Hydrazide.

35. The kit, according to claim 32, wherein:

$R^1 = -\text{CO}-\text{DEXTRAN}$ and where

$R^2 = -\text{COOH}$, $-\text{SH}$, $-\text{NH}_2$, $-\text{NCS}$, $-\text{NCO}$, $-\text{CO}_2$, $-\text{NHS}$, $-\text{Maleimide}$ or Hydrazide.

36. The kit, according to claim 32, wherein:

$R^1 = \text{CO}(\text{CH}_2)_n - (\text{CONHCHCONH})_N$ where $R = \text{Alkyl}$, Aryl , $n = 1-100$,

|
R

$n = 1-15$, and

$R^2 = -\text{COOH}$, $-\text{SH}$, $-\text{NH}_2$, $-\text{NCS}$, $-\text{CO}_2$, $-\text{NHS}$, $-\text{Maleimide}$, or Hydrazine.

37. The kit, according to claim 32, wherein:

$R^1 = -\text{CO-Aryl}-(\text{CH}_2)_n$ and where

$R^2 = -\text{COOH}, -\text{SH}, -\text{NH}_2, -\text{NCS}, -\text{CO}_2, -\text{NHS}, -\text{Maleimide}, \text{ or } \text{Hydrazine}.$

38. The kit, according to claim 32, wherein:

$R^1 = \text{CO}(\text{CH}_2)_n\text{-CONH}-(\text{CH}_2)_N -$, where

$R^2 = -\text{SH}, -\text{NH}_2, -\text{NCS}, -\text{NCO}, -\text{Maleimide}, \text{ or } -\text{NHNH}_2.$

39. The kit, according to claim 32, wherein:

$R^1 = \text{CO}(\text{CH}_2)_n\text{-CONH-PEG}$, where $n = 1-15$ and

$R^2 = -\text{SH}, -\text{NH}_2, -\text{NCS}, -\text{NCO}, -\text{Maleimide}, \text{ or } -\text{NHNH}_2.$

40. The kit, according to claim 32, wherein:

$R^1 = \text{CO}(\text{CH}_2)_n\text{-CONH-DEXTRAN}$, where $n = 1-15$ and

$R^2 = -\text{SH}, -\text{NH}_2, -\text{NCS}, -\text{NCO}, -\text{Maleimide}, \text{ or } -\text{NHNH}_2.$

41. The kit, according to claim 32, wherein:

$R^1 = \text{CH}_2-(\text{CH}_2)_n\text{-CONH-X}$, where

$X = (\text{CH}_2)_n$, $n = 1-15$

= PEG

= DEXTRAN

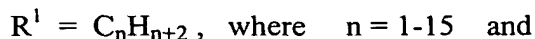
and $R^2 = -\text{SH}, -\text{NH}_2, -\text{NCS}, -\text{NCO}, -\text{Maleimide}, \text{ or } -\text{NHNH}_2.$

42. The kit, according to claim 325, wherein:

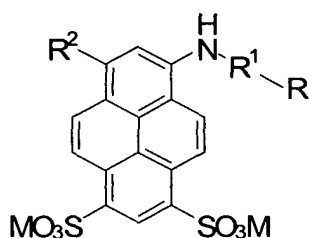
$R^1 = \text{CH}_2-(\text{CH}_2)_n$, where $n = 1-15$ and

$R^2 = -\text{SH}, -\text{NH}_2, -\text{NCS}, -\text{NCO}, -\text{Maleimide}, -\text{COONHS}, \text{ or } -\text{NHNH}_2.$

43. The kit, according to claim 32, wherein:



44. A kit comprising a compound of the structure:



where $R^2 = -OH, -NH_2, SO_3 - \text{ or } SH(NH_2)_2,$

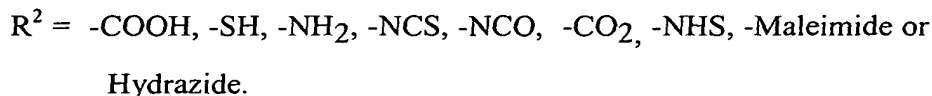
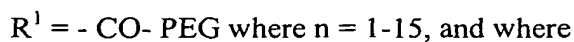
M is one of the alkali metals (Li, Na, K), ammonium (NH₄) , or pyridinium (Py),

R^1 is a spacer comprised of 2 to 20 carbon, oxygen or nitrogen atoms, with the carbon containing sequences chosen from alkyl, alkenyl, arylalkyl, or alkoxy groups, which can bear any of several substitutions along the carbon chain, including but not limited to amino, carbonyl, carboxyl, hydroxyl, sulfonyl, sulfonamide, oxyethylene, ethylene oxide, or hydroxyl moieties,

and,

R' = a succinimidyl ester, hydrazide, isothiocynato, isocyanato, maleimido, halo-acetamido, biotin or other homofunctional linker chemistry capable of covalently binding with a complementary reactive chemical entity on another molecule for the purpose of permanently linking the fluorophore to the second molecule.

45. The kit, according to claim 44, wherein:



46. The kit, according to claim 44, wherein:

$R^1 = -CO-DEXTRAN$ and where

$R^2 = -COOH, -SH, -NH_2, -NCS, -NCO, -CO_2, -NHS, -Maleimide$ or Hydrazide.

47. The kit, according to claim 44, wherein:

$R^1 = CO(CH_2)_n-(CONHCHCONH)_N$ where $R = Alkyl, Aryl, n = 1-100,$
 $\quad \quad \quad |$
 $\quad \quad \quad R$

$n = 1-15,$ and

$R^2 = -COOH, -SH, -NH_2, -NCS, -CO_2, -NHS, -Maleimide,$ or Hydrazine.

48. The kit, according to claim 44, wherein:

$R^1 = -CO-Aryl-(CH_2)_n$ and where

$R^2 = -COOH, -SH, -NH_2, -NCS, -CO_2, -NHS, -Maleimide,$ or Hydrazine.

49. The kit, according to claim 44, wherein:

$R^1 = CO(CH_2)_n-CONH-(CH_2)_N-$, where

$R^2 = -SH, -NH_2, -NCS, -NCO, -Maleimide,$ or $-NHNH_2$.

50. The kit, according to claim 44, wherein:

$R^1 = CO(CH_2)_n-CONH-PEG,$ where $n = 1-15$ and

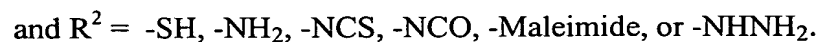
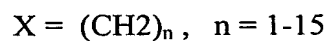
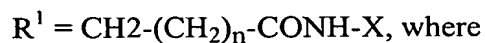
$R^2 = -SH, -NH_2, -NCS, -NCO, -Maleimide,$ or $-NHNH_2$.

51. The kit, according to claim 44, wherein:

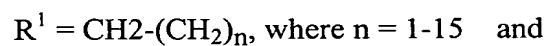
$R^1 = CO(CH_2)_n-CONH-DEXTRAN,$ where $n = 1-15$ and

$R^2 = -SH, -NH_2, -NCS, -NCO, -Maleimide,$ or $-NHNH_2$.

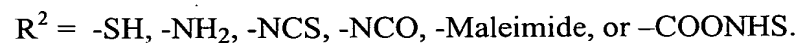
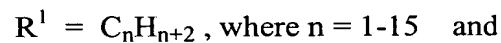
52. The kit, according to claim 44, wherein:



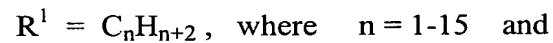
53. The kit, according to claim 44, wherein:



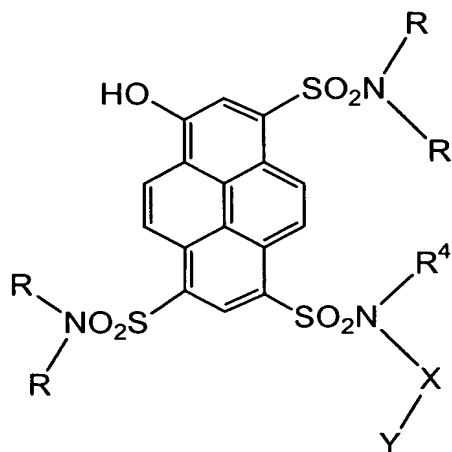
54. The kit, according to claim 44, wherein:



55. The kit, according to claim 44, wherein:



56. A kit comprising a fluorescent compound of the structure:



R = is chosen from any of alkyl, alkenyl, alkylaryl, aromatic, or alkoxy groups which can be substituted by various constituents including but not limited to amino, carbonyl, carboxyl, hydroxyl, sulfonyl, sulfonamide, oxyethylene, ethylene oxide, or hydroxyl moieties,

R4 is chosen from -H, -CH₃, alkyl, alkenyl, aromatic, or alkylaryl groups which can, in turn be substituted with any of several substitutions along the carbon chain, including but not limited to amino, carbonyl, carboxyl, hydroxyl, sulfonyl, sulfonamide, oxyethylene, ethylene oxide, or hydroxyl moieties,

X is chosen from one of (CH₂)_n, aryl-(CH₂)_n, PEG, DEXTRAN, (CH₂)_n-CONH-(CH₂)_n, (CH₂)_N-CONH-Z, where n= 1-15, Z = PEG, DEXTRAN or a polypeptide, which can bear any of several substitutions along the carbon chain, including but not limited to amino, carbonyl, carboxyl, hydroxyl, sulfonyl, sulfonamide, oxyethylene, ethylene oxide, or hydroxyl moieties,

and,

Y is chosen from one of -NH₂, -NCS, -SH, -OH, -COOH, -COONHS, -NH₂, -Maleimide, -hydrazide, CHO, biotinyl group, avidinyl group, NHCOCH₂I or other monofunctional linker chemistry capable of covalently binding with a complementary reactive chemical entity on another molecule for the purpose of permanently linking the fluorophore to the second molecule.

57. The kit, according to claim 56, wherein X = (CH₂)_n where n=1-15 and Y is chosen from one of -NH₂, -NCS, -SH, -OH, -COOH, -COONHS, -NH₂, -Maleimide, -hydrazide, CHO, biotinyl group, avidinyl group, NHCOCH₂I or other monofunctional linker chemistry capable of covalently binding with a complementary reactive chemical entity on another molecule for the purpose of permanently linking the fluorophore to the second molecule.

58. The kit, according to claim 56, wherein $X = \text{aryl}-(\text{CH}_2)_n$ where $n=1-15$ and Y is chosen from one of -NH₂, -NCS, -SH, -OH, -COOH, -COONHS, -NH₂, -Maleimide, -hydrazide, CHO, biotinyl group, avidinyl group, NHCOCH₂I or other monofunctional linker chemistry capable of covalently binding with a complementary reactive chemical entity on another molecule for the purpose of permanently linking the fluorophore to the second molecule.

59. The kit, according to claim 56, wherein $X = \text{PEG}$ and Y is chosen from one of -NH₂, -NCS, -SH, -OH, -COOH, -COONHS, -NH₂, -Maleimide, -hydrazide, CHO, biotinyl group, avidinyl group, NHCOCH₂I or other monofunctional linker chemistry capable of covalently binding with a complementary reactive chemical entity on another molecule for the purpose of permanently linking the fluorophore to the second molecule.

60. The kit, according to claim 56, wherein $X = \text{DEXTRAN}$ and Y is chosen from one of -NH₂, -NCS, -SH, -OH, -COOH, -COONHS, -NH₂, -Maleimide, -hydrazide, CHO, biotinyl group, avidinyl group, NHCOCH₂I or other monofunctional linker chemistry capable of covalently binding with a complementary reactive chemical entity on another molecule for the purpose of permanently linking the fluorophore to the second molecule.

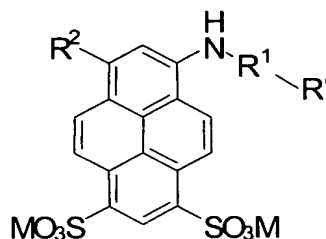
61. The kit, according to claim 56, wherein $X = (\text{CH}_2)_n\text{-CONH}-(\text{CH}_2)_n$, where $n=1-15$ and Y is chosen from one of -NH₂, -NCS, -SH, -OH, -COOH, -COONHS, -NH₂, -Maleimide, -hydrazide, CHO, biotinyl group, avidinyl group, NHCOCH₂I or other monofunctional linker chemistry capable of covalently binding with a complementary reactive chemical entity on another molecule for the purpose of permanently linking the fluorophore to the second molecule.

62. The kit, according to claim 56, wherein $X = (\text{CH}_2)_N\text{-CONH-Z}$, where Z= PEG, DEXTRAN or a polypeptide and Y is chosen from one of -NH₂, -NCS, -SH, -OH, -COOH, -COONHS, -NH₂, -Maleimide, -hydrazide, CHO, biotinyl group, avidinyl group, NHCOCH₂I or other monofunctional linker chemistry capable of

covalently binding with a complementary reactive chemical entity on another molecule for the purpose of permanently linking the fluorophore to the second molecule.

63. A method for detecting biomolecules comprising:

a) providing a fluorescent compound of the general structure



where $R^2 = -OH, -NH_2, SO_3 -$ or $SH(NH_2)_2$,

M is one of the alkali metals (Li, Na, K), ammonium (NH_4), or pyridinium (Py),

R^1 is a spacer comprised of 2 to 20 carbon, oxygen or nitrogen atoms, with the carbon containing sequences chosen from alkyl, alkenyl, arylalkyl, or alkoxy groups, which can bear any of several substitutions along the carbon chain, including but not limited to amino, carbonyl, carboxyl, hydroxyl, sulfonyl, sulfonamide, oxyethylene, ethylene oxide, or hydroxyl moieties,

and,

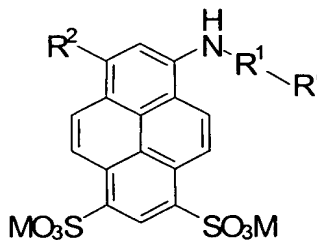
$R' =$ a terminal carboxyl, amino, sulfhydryl or biotinyl group; and

b) detecting the presence or absence of a fluorescence signal.

64. The method, according to claim 63, for use in the labeling of amino or carboxyl groups proteins and peptides.

65. The method, according to claim 63, for use in the labeling of sulfhydryl groups on proteins and peptides.

66. The method, according to claim 63, for use in the labeling of oligonucleotides at the 3' or 5' terminus.
67. The method, according to claim 63, for use in the labeling nucleoside bases in oligonucleotides during chemical synthesis or by random priming.
68. The method, according to claim 63, for use in the labeling nucleoside bases in oligonucleotides during reverse transcription/PCR or PCR.
69. The method, according to claim 63, for use in the labeling of any antigen specific polyclonal or monoclonal IgG.
70. The method, according to claim 63, further comprising the step of conjugating avidin or streptavidin to the fluorescent compound, for use in labeling and detecting any biotinylated compound.
71. The method, according to claim 63, further comprising the step of conjugating any peptide to the fluorescent compound, for use in homogeneous fluorescence polarization assays.
72. A method for detecting biomolecules comprising:
a) providing a fluorescent compound of the general structure



where $R^2 = -OH, -NH_2, SO_3 -$ or $SH(NH_2)_2$,

M is one of the alkali metals (Li, Na, K), ammonium (NH₄) , or pyridinium (Py),

R¹ is a spacer comprised of 2 to 20 carbon, oxygen or nitrogen atoms, with the carbon containing sequences chosen from alkyl, alkenyl, arylalkyl, or alkoxy groups, which can bear any of several substitutions along the carbon chain, including but not limited to amino, carbonyl, carboxyl, hydroxyl, sulfonyl, sulfonamide, oxyethylene, ethylene oxide, or hydroxyl moieties,

and,

R' = a succinimidyl ester, hydrazide, isothiocyanato, isocyanato, maleimido, halo-acetamido, biotin or other homofunctional linker chemistry capable of covalently binding with a complementary reactive chemical entity on another molecule for the purpose of permanently linking the fluorophore to the second molecule; and

b) detecting the presence or absence of a fluorescence signal.

73. The method, according to claim 72, for use in the labeling of sulfhydryl groups on proteins and peptides.

74. The method, according to claim 72, for use in the labeling of oligonucleotides at the 3' or 5' terminus.

75. The method, according to claim 72, for use in the labeling nucleoside bases in oligonucleotides during chemical synthesis or by random priming.

76. The method, according to claim 72, for use in the labeling nucleoside bases in oligonucleotides during reverse transcription/PCR or PCR.

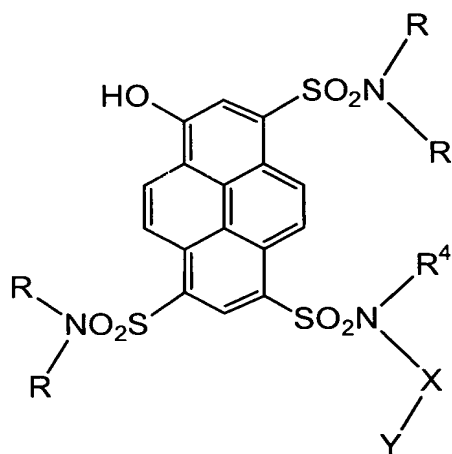
77. The method, according to claim 72, for use in the labeling of any antigen specific polyclonal or monoclonal IgG.

78. The method, according to claim 72, further comprising the step of conjugating avidin or streptavidin to the fluorescent compound, for use in labeling and detecting any biotinylated compound.

79. The method, according to claim 72, further comprising the step of conjugating any peptide to the fluorescent compound, for use in homogeneous fluorescence polarization assays.

80. A method for detecting biomolecules comprising:

a) providing a fluorescent compound of the general structure



R = is chosen from any of alkyl, alkenyl, alkylaryl, aromatic, or alkoxy groups which can be substituted by various constituents including but not limited to amino, carbonyl, carboxyl, hydroxyl, sulfonyl, sulfonamide, oxyethylene, ethylene oxide, or hydroxyl moieties,

R₄ is chosen from -H, -CH₃, alkyl, alkenyl, aromatic, or alkylaryl groups which can, in turn be substituted with any of several substitutions along the carbon chain, including but not limited to amino, carbonyl, carboxyl, hydroxyl, sulfonyl, sulfonamide, oxyethylene, ethylene oxide, or hydroxyl moieties,

X is chosen from one of $(\text{CH}_2)_n$, aryl- $(\text{CH}_2)_n$, PEG, DEXTRAN, $(\text{CH}_2)_n$ -CONH- $(\text{CH}_2)_n$, $(\text{CH}_2)_n$ -CONH-Z, where $n = 1-15$, Z = PEG, DEXTRAN or a polypeptide, which can bear any of several substitutions along the carbon chain, including but not limited to amino, carbonyl, carboxyl, hydroxyl, sulfonyl, sulfonamide, oxyethylene, ethylene oxide, or hydroxyl moieties,

and,

Y is chosen from one of -NH₂, -NCS, -SH, -OH, -COOH, -COONHS, -NH₂, -Maleimide, -hydrazide, CHO, biotinyl group, avidinyl group, NHCOCH₂I or other monofunctional linker chemistry capable of covalently binding with a complementary reactive chemical entity on another molecule for the purpose of permanently linking the fluorophore to the second molecule; and

b) detecting the presence or absence of a fluorescence signal.

81. The method, according to claim 80, for use in the labeling of sulfhydryl groups on proteins and peptides.

82. The method, according to claim 80, for use in the labeling of oligonucleotides at the 3' or 5' terminus.

83. The method, according to claim 80, for use in the labeling nucleoside bases in oligo-nucleotides during chemical synthesis or by random priming.

84. The method, according to claim 80, for use in the labeling nucleoside bases in oligonucleotides during reverse transcription / PCR or PCR.

85. The method, according to claim 80, for use in the labeling of any antigen specific polyclonal or monoclonal IgG.

86. The method, according to claim 80, further comprising the step of conjugating the avidin or streptavidin to the fluorescent compound, for use in labeling and detecting any biotinylated compound.

87. The method, according to claim 80, further comprising the step of conjugating any peptide to the fluorescent compound, for use in homogeneous fluorescence polarization assays.